The effect of AM281, a cannabinoid antagonist, on memory performance during spontaneous morphine withdwal in mice

G. Vaseghi, M. Rabbani[*], V. Hajhashemi

Department of pharmacology, School of Pharmacy, Isfahan University of Medical Sciences, Isfahan, Iran

Background and Aims: Abrupt cessation of morphine leads to withdrawal signs and cognitive deficits. Endocanabinoid system is activated during withdrawal, so the aim of present study was to assess the effects of AM281, cannabinoid antagonist/inverse agonist on memory deficit following spontaneous morphine withdrawal.

Methods: Cognition was evaluated using the object recognition task. The novel object recognition task was tested in a square wooden open-field box using different shape objects. The test was consisted of three sections: 15 min exploration, first trial for 12 min and second one for 5 min. In the second trial the difference in exploration between a previously seen object and a novel one, was considered as an index of memory performance (recognition index: RI). Male mice were made dependent by increasing doses of morphine (30-90 mg/kg) s.c. twice daily for 3 days. AM281 (0.62, 1.25 and 2.5 mg/kg) was co-injected with acute or chronic morphine i.p. RI was evaluated on the third day, 4 h after the last dose of morphine.

Results: The results suggested that administration of AM281 at a dose of 2.5 mg/kg in chronic form and 5 mg/kg in acute dose improved memory deficit in morphine withdrawn animals.

Conclusions: Cannabinoid antagonists have promising effect on improving memory after morphine withdrawal.

Keywords: Cannabinoid antagonist; Morphine withdrawal; Memory deficit